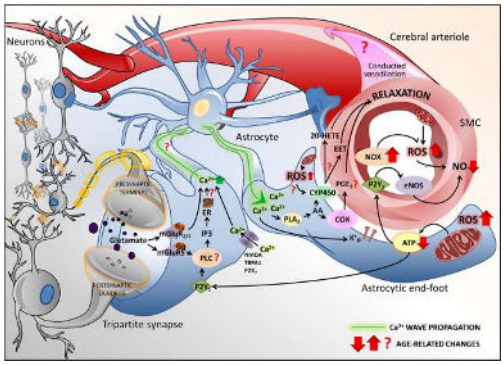




Anatomical Changes In The Neurovascular System

Copyright © MissionCIT, LLC 2020 All rights reserved | EMS CARE™ Chapter 29 | Geriatric Emergencies

Thank you Justin!

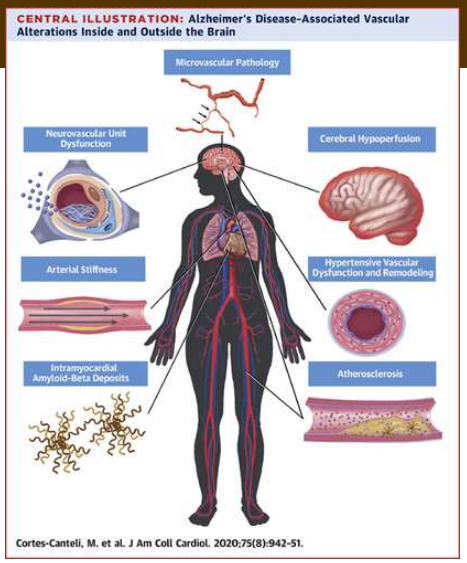
Welcome to this lesson, where we discuss the neurovascular system. We look at cardiovascular changes and the possible resultant conditions, including Alzheimer's, dementia, and delirium.

Good Studying

MISSION CIT

CARDIOVASCULAR CHANGES - I

- Aortic or arterial stiffness
- Autonomic dysregulation
- Neurovascular decoupling
- Damaged to the blood-brain-barrier
- Decreases cerebral blood flow
- Loses mitochondria
- Cognitive dysfunction



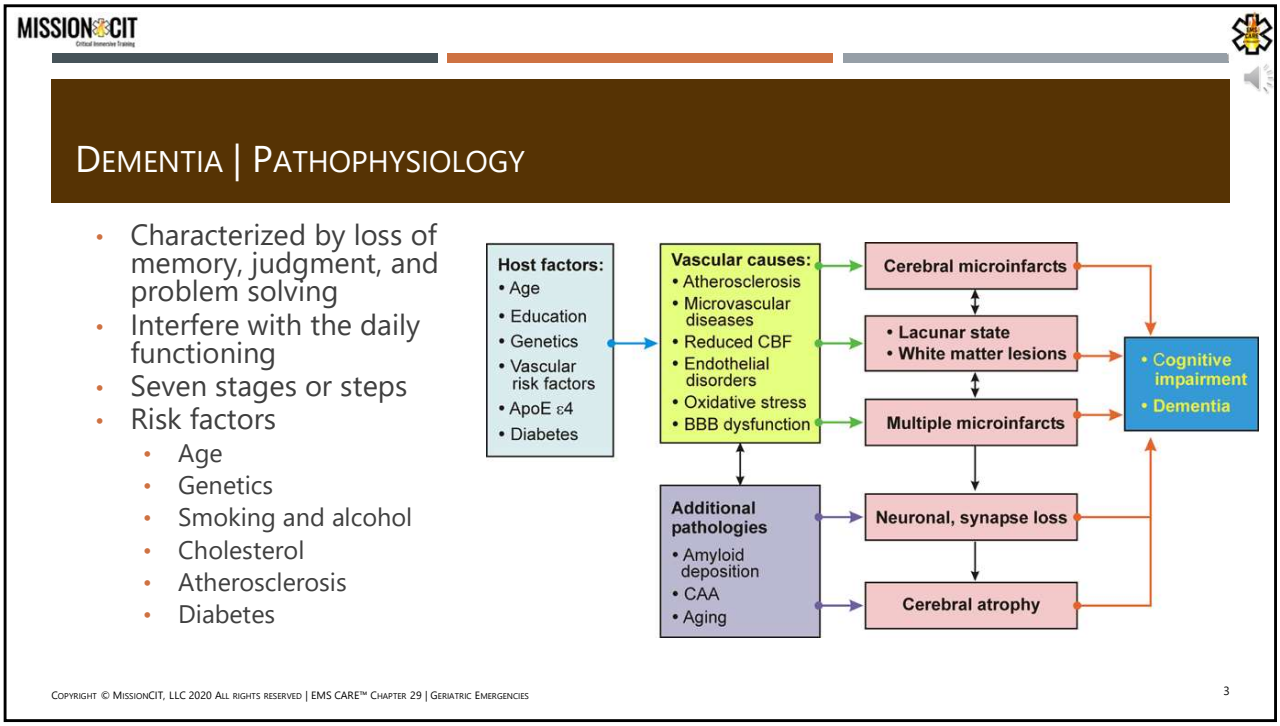
COPYRIGHT © MISSIONCIT, LLC 2020 ALL RIGHTS RESERVED | EMS CARE™ CHAPTER 29 | GERIATRIC EMERGENCIES

2

Many neurovascular changes happen as part of the aging process. Some of them are:

- Aortic or arterial stiffness
- Autonomic dysregulation
- Neurovascular uncoupling
- Damages to the blood-brain barrier

In particular, aging decreases cerebral blood flow while at the capillary level, the cerebral endothelium loses mitochondria. All these eventually lead to cognitive dysfunction.



Dementia is an umbrella term used to describe a group of conditions that are characterized by the impairment of at least two brain functions, like loss of memory, language, judgment, and problem-solving. These symptoms interfere with the daily functioning of the patients.

Out of these conditions, Alzheimer's is the most common.

The pathophysiology of this condition comprises seven steps or stages.

- Stage 1 – There is no impairment and Alzheimer's is not detected at this stage.
- Stage 2 – Very mild decline
- Stage 3 – Mild decline
- Stage 4 – Moderate decline
- Stage 5 – A moderately severe decline
- Stage 6 – Severe decline
- Stage 7 – A very severe decline

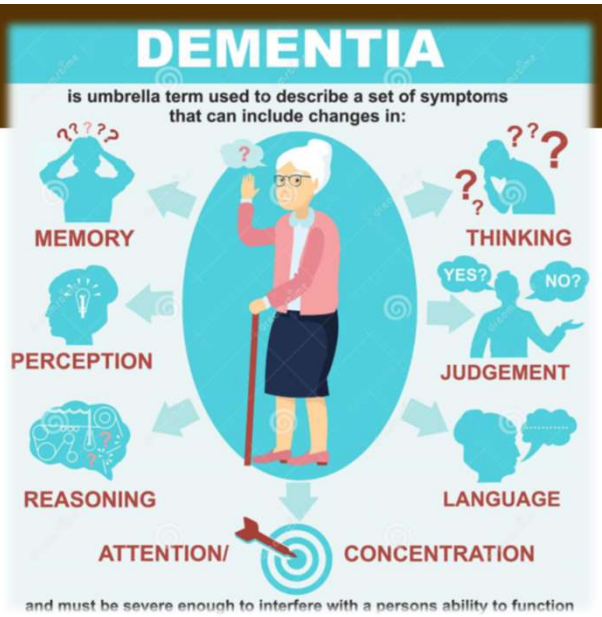
The risk factors for dementia are:

- Age
- Genetics or family history
- Smoking and alcohol
- Cholesterol
- Atherosclerosis
- Plasma homocysteine
- Diabetes

MISSION CIT

DEMENTIA | SYMPTOMS

- Forgetfulness
- Limited social skills
- Impaired abilities
- Confusion and disorientation
- Inability to recognize things
- Irritability
- Mood swings
- Hallucination
- Depression
- Paranoia



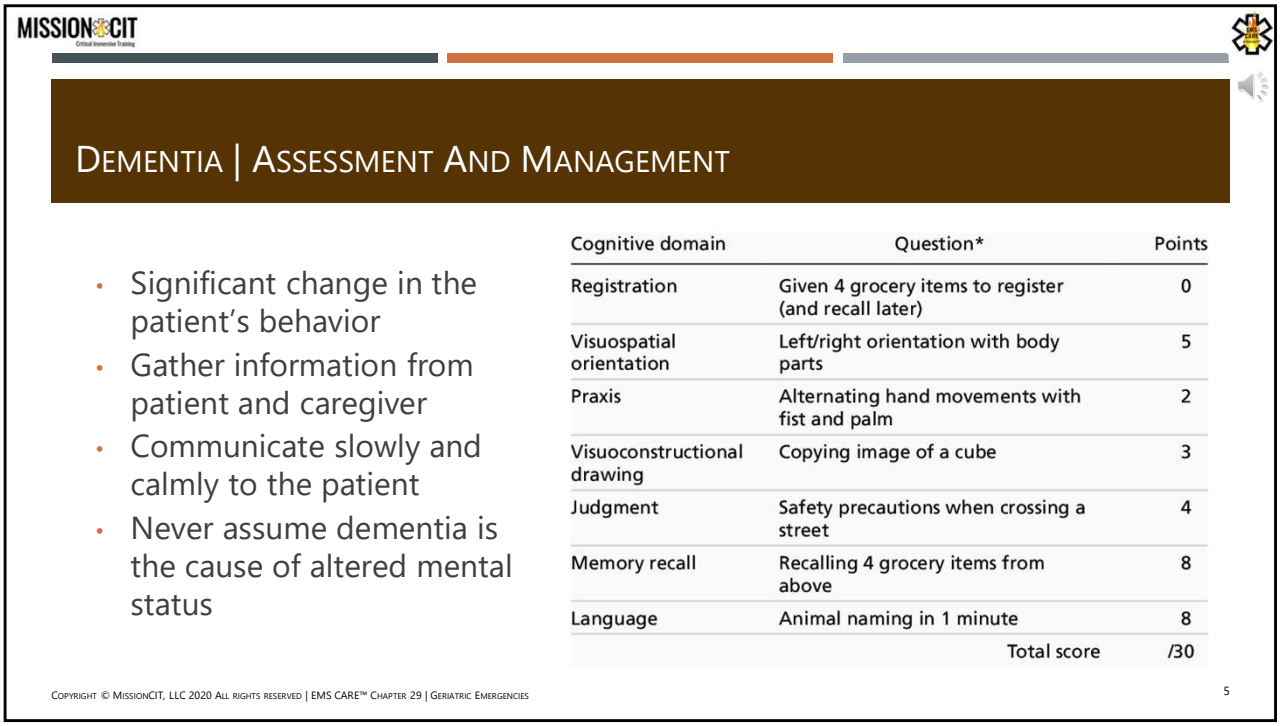
COPYRIGHT © MISSIONCIT, LLC 2020 ALL RIGHTS RESERVED | EMS CARE™ CHAPTER 29 | GERIATRIC EMERGENCIES

4

The signs and symptoms of dementia are:

- Forgetfulness
- Limited social skills
- Impaired abilities that interfere with daily activities
- Confusion and disorientation
- Inability to recognize everyday things
- Irritability
- Wandering and getting lost
- Unsteady walking
- Mood swings
- Hallucination

- Depression
- Paranoia

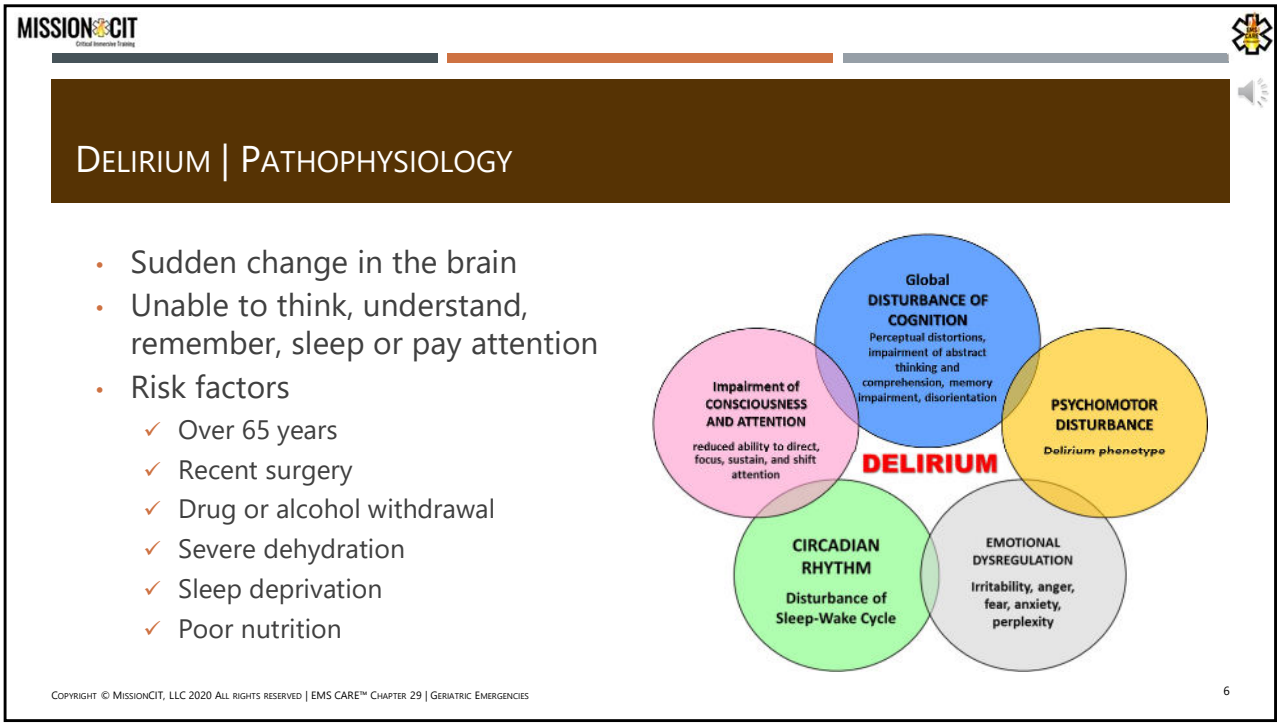


Since dementia is a chronic condition, you'll be most likely called when there are sudden changes in their symptoms or if they are unable to manage their behavior. Currently, there are no known treatments for dementia, but a significant change in a patient's behavior could indicate an underlying condition.

So, look for signs and symptoms that can lead to the underlying cause. Also, gather as much information as possible from the family or caregivers. While talking to the patient and during the assessment, communicate slowly and calmly as taking them away from home can

frighten them. Explain what you're going to do and why because seeing an ambulance can frighten them.

Finally, when you get a call regarding an altered mental status, never assume it to be dementia because similar symptoms can manifest in sepsis too.



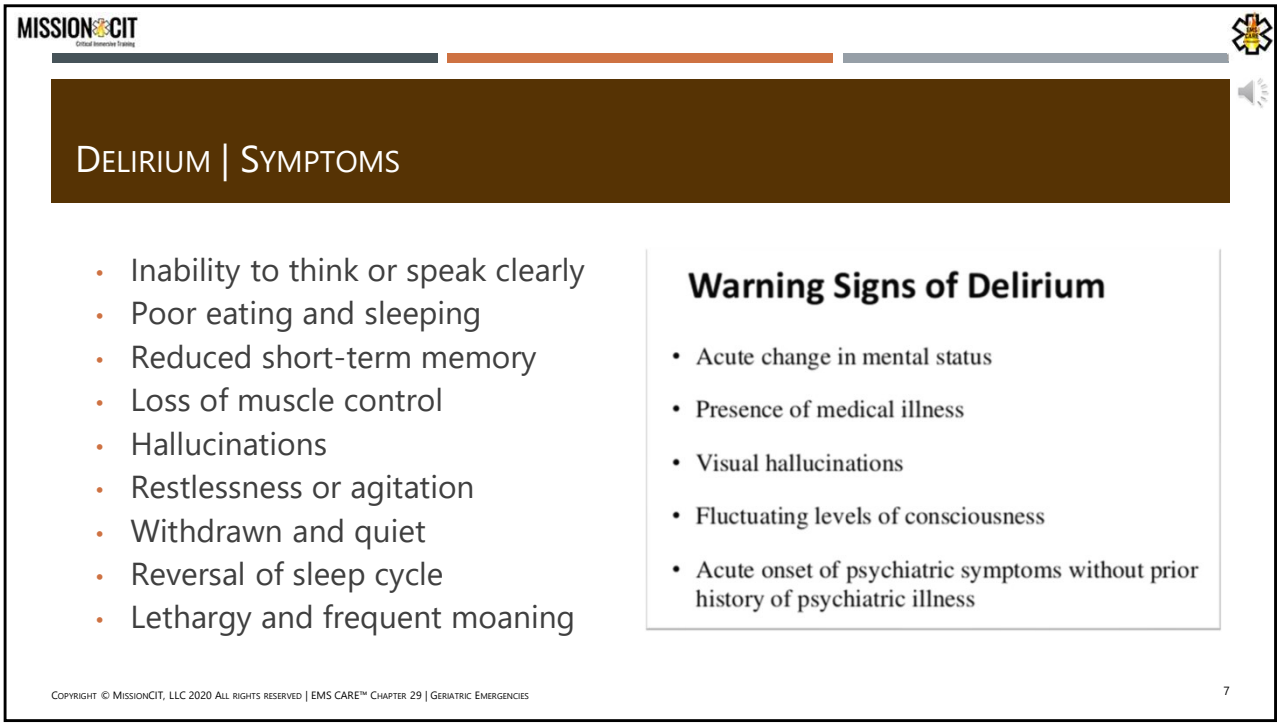
Delirium is a sudden change in the brain that leads to mental confusion and emotional disruption. The patient is unable to think, understand, remember, sleep, or pay attention.

It can happen due to a variety of reasons such as alcohol withdrawal, surgery, pneumonia, consumption of poisonous substances, lack of enough oxygen to the brain, dementia, and more. The good part is that delirium is temporary and can go away with appropriate care.

People who are 65 years or older are at a high risk of

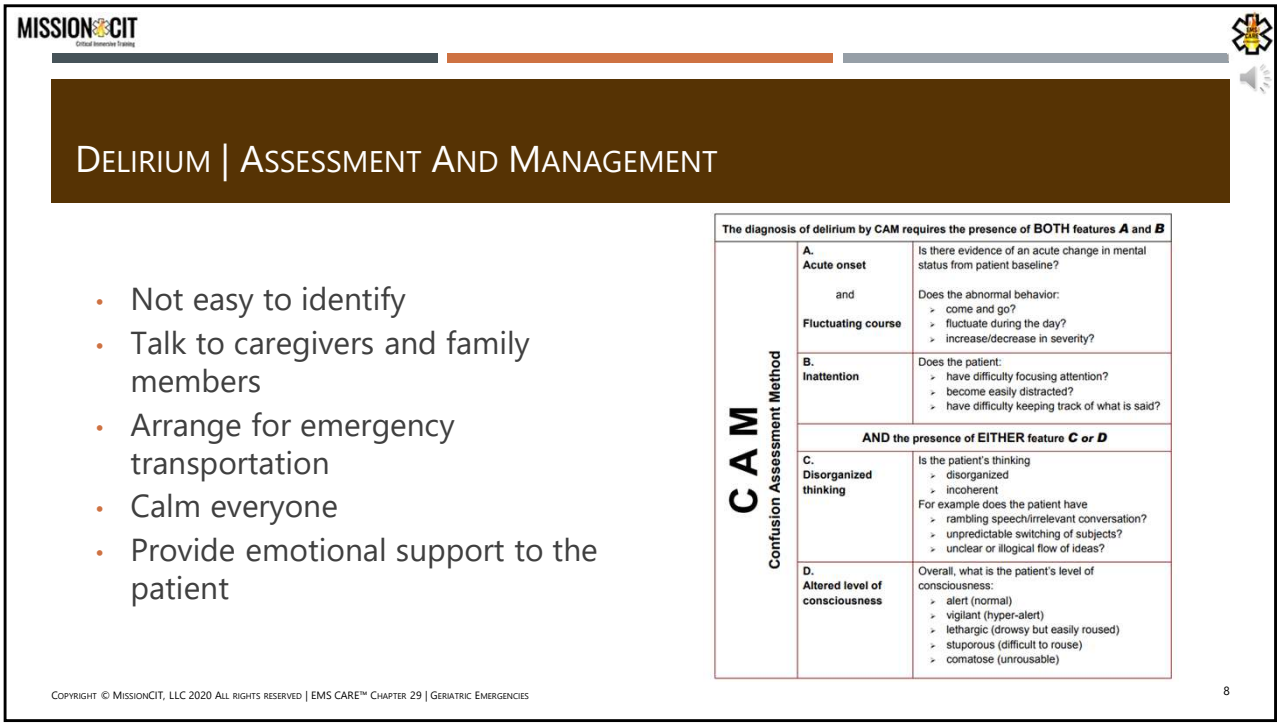
delirium. Other risk factors are:

- People who’ve had surgery recently
- People suffering from drugs or alcohol withdrawal symptom
- Those who’ve had a stroke, dementia, or any other conditions that can damage the brain
- Those under severe emotional stress
- Severe dehydration
- Sleep deprivation
- Poor nutrition
- Certain medications
- Infections such as urinary tract disorder



Some of the signs and symptoms of delirium are:

- Inability to think or speak clearly
- Sleeping and eating poorly
- Reduced short-term memory
- Loss of muscle control
- Hallucinations
- Restlessness or agitation
- Being quiet and withdrawn suddenly
- Reversal of day-night sleep-wake cycle
- Slowed down movement and lethargy, and finally
- Calling out often and moaning.



Delirium can be hard to identify, so talk to caregivers and family members about the onset of different conditions as this can help you zero-in on the problem. Also, look at the risk factors as this can be your clue.

If you think the patient requires emergency transportation, arrange for it right away. Communicate to the patient and caregivers and calm everyone down. Provide a few extra minutes of emotional support, especially if the senior is frightened or confused.

With this, we come to the end of this lesson and in the next one, Justin will take you through changes in the

gastrointestinal system.